Remarks

Claims 1-3 and 5-23 remain in the application.

Claim Rejections -- 35 U.S.C. 103

Claims 1-3 and 5-23 were rejected under 35 U.S.C. 103 as being unpatentable over Fung (US Patent Application Publication No. 2002/0004912) in view of Loucks et al (US Patent No. 5,650,936). This rejection is respectfully traversed.

Claim 1

As previously presented, claim 1 recites as follows:

1. A system for power management of a rack of computers, the system comprising:
server side infrastructure (SSI) circuitry at each computer in the rack, the SSI circuitry including local monitoring circuitry coupled to a central processing unit (CPU) of the computer; and
a centralized power management module (CPMM) with an out-of-band (OOB) management link to the SSI circuitry at each computer in the rack,
wherein the CPMM is configured to monitor power being consumed by the CPUs by **sending a polling message to the SSI circuitry at each computer in the rack**,
wherein the local monitoring circuitry within the SSI circuitry at each computer in the rack is configured to monitor power consumption at the CPU and to respond to the polling message from the CPMM by transmitting a root mean squared power consumption value to the CPMM, and
wherein the CPMM is further configured to apply a set of rules to the root mean squared power consumption values from the local monitoring circuitry to determine when and at which computers to enable and disable a CPU power throttling mode.

(Emphasis added.)

Amended claim 1 is now limited to a system for power management of an entire rack of computers in which a centralized power management module (CPMM) is configured to send a **"polling message"** to server side infrastructure

(SSI) circuitry at each computer in the rack. This limitation is supported in the original specification, for example, on page 5, lines 9-13, which recites as follows. "**A management link 114 between the CPMM 202 and the local monitoring circuitry 104 may be used to receive a polling message from the CPMM 202.** When polled, the local monitoring circuitry **104** may respond by transmitting via the management link **114** a root mean squared or other derived power consumption value to the CPMM **202**." (Emphasis added.) This limitation is also supported in the original specification on page 6, lines 3-4, which recites as follows. "The CPMM **202** may be used to monitor the power being consumed by the CPUs **102**. The monitoring may be done by polling."

No Teaching in Fung of Polling from a Centralized Power Management Module

Applicants respectfully disagree with the assertion in the latest office action that Fung teaches the claimed polling from a centralized power management module. In support of that assertion, citation is made in the office action to paragraph [0104], lines 4-15 and paragraph [0107]. (See latest office action, page 3.)

As discussed in detail below, **neither citation to Fung specifies a communication mechanism**. Hence, there appears to be insufficient support for the assertion that the disclosure of Fung reads upon the polling limitation of claim 1.

First, let us consider paragraph [0104] of Fung. That paragraph recites as follows.

> [0104] Before describing particular implementations that relate to more or less specific CPU designs and interfaces, attention first directed to a simplified embodiment of the inventive system and method with respect to **FIG. 9**. In this embodiment, at least two (and up to n) server modules **402**-1,...,**402**-N are provided, each including a CPU **404** and a memory **408**. CPU **404** includes an activity indicator generator **406** which generates activity indicators, and either (i) communicates the activity indicators to memory **408** for storage in an activity indicator(s) data structure **410**, or not shown, (ii) communicates them directly to a server module control unit and algorithm **432** within management module **430**. Different types of activity indicators such as are described elsewhere in the specification, such as for example an idle thread based activity indicator may be used. Whether stored in memory or communicated directly, the activity indicator(s) are used by the management module to determine the loading on each of the server modules individually and as a group. In one embodiment, activity information or indicators created on any one computer or device (such as a server module) is accessible to a manager or supervisor via standard networking protocol.

As seen above, paragraph [0104] states that "CPU **404** includes an activity indicator generator **406** which generates activity indicators, and either (i) communicates the activity indicators to memory **408** for storage in an activity indicator(s) data structure **410**, or not shown, (ii) communicates them directly to a server module control unit and algorithm within management module **430**." However, applicants respectfully submit the above recitation does not specify a particular communication mechanism.

Now, let us consider paragraph [0107] of Fung. That paragraph recites as follows.

> **[0107]** This power management scheme may be interpreted in one aspect as providing a Mode1-to-Mode2 and Mode2-to-Mode1 power management scheme, where both Mode1 and Mode2 are active modes and the state of the CPU in either Mode 1 or Mode 2 is controlled locally by the CPU, and in another aspect as providing a Mode3 (inactive mode or maintenance of memory contents only). Mode3 control may also be performed locally by the CPU, but in one of the preferred embodiments of the invention, entry into a Mode 3 stage is desirably controlled globally in a multi-CPU system. Where the multi-CPU's are operative with a plurality of servers for multi-serverpower management, the Management Module (or a Server Module acting as a manager on behalf of a plurality of server modules) determines which Server Module should enter a Mode 3 state using the Server Module control algorithm and unit **432**. Activity monitoring of individual Server Modules **402** is desirably based on the standard network protocol, such as for example SNMP. Therefore the activity indicators may be retrieved from the CPU **406** or memory **408** via NIC **440** as is known in the art. A communication link coupling microcontrollers (μC) **442** together, and in particular the microcontroller of the Management Module with the microcontrollers of the several Server Modules. This permits the management module to communicate commands or signals to the server modules which are received by the microcontrollers even when the CPUs are in a suspended state (Mode 3). In so providing for monitoring over the first link (the Ethernet) and control over the second link (the AMPC bus), the server modules may be monitored for activity and controlled globally to reduce power consumption while providing sufficient on-line capacity. It is noted that the power management may be effected by altering either or both of the CPU clock frequency **420** or the CPU voltage **416**.

As pointed out by the Examiner, paragraph [0107] states that "Therefore the activity indicators may be retrieved from the CPU **406** or memory **408** via NIC **440** as is known in the art." However, applicants respectfully submit that the above recitation in Fung does not specify a particular communication mechanism.

Rather, the particular communication mechanism taught by Fung is clearly described in paragraphs [0160] and [0161] of Fung, which are quoted below.

> [0160] ... Each server has its own network agent and will report (immediately or within some predetermined time interval) to the global master on any policy violation.
>
> [0161] An exemplary operational scenario for the internetwork is now described. Assume for example, that while a particular server is operating in the 2nd power mode and the network agent detects the CPU utilization for that server rises above an upper threshold (for example, a threshold of about 95%) for some fixed period of time, this is considered as a policy violation and a message will be sent to the global master....

As seen above, Fung teaches that a **network agent** at each server monitors the server to detect policy violations and **reports any detected policy violation** via a message to a global master. **Applicants respectfully submit that the use of a network agent at each server by Fung teaches against the claimed polling mechanism by a centralized power management module.**

Loucks is cited in relation to root mean squared power consumption values. Loucks does not pertain to the above discussed distinction over Fung.

Hence, for at least the above-discussed reasons, applicants respectfully submit that amended claim 1 is now patentably distinguished over Fung in view of Loucks.

Claims 2-3 and 5-11 depend from claim 1. Hence, for at least the reasons discussed above in relation to claim 1, applicants respectfully submit that claims 2-3 and 5-11 are also patentably distinguished over the cited art.

Claim 12, as previously presented, recites similar limitations as discussed above in relation to claim 1. Hence, for at least the reasons discussed above in relation to claim 1, applicants respectfully submit that claim 12 is also patentably distinguished over the cited art.

Claims 13-15 depend from claim 12. Hence, for at least the reasons discussed above in relation to claim 12, applicants respectfully submit that claims 13-15 are now also patentably distinguished over the cited art.

Claim 16, as previously presented, recites similar limitations as discussed above in relation to claim 1. Hence, for at least the reasons discussed above in

relation to claim 1, applicants respectfully submit that claim 16 is also patentably distinguished over the cited art.

Claim 17, as previously presented, recites similar limitations as discussed above in relation to claim 1. Hence, for at least the reasons discussed above in relation to claim 1, applicants respectfully submit that claim 17 is also patentably distinguished over the cited art.

Claims 18-19 depends from claim 17. Hence, for at least the reasons discussed above in relation to claim 17, applicants respectfully submit that claim 18-19 are also patentably distinguished over the cited art.

Claim 20, as previously presented, recites similar limitations as discussed above in relation to claim 1. Hence, for at least the reasons discussed above in relation to claim 1, applicants respectfully submit that claim 20 is also patentably distinguished over the cited art.

Claim 21 depends from claim 20. Hence, for at least the reasons discussed above in relation to claim 20, applicants respectfully submit that claim 21 is also patentably distinguished over the cited art.

Claim 22, as previously presented, recites similar limitations as discussed above in relation to claim 1. Hence, for at least the reasons discussed above in relation to claim 1, applicants respectfully submit that claim 20 is also patentably distinguished over the cited art.

Claim 23 depends from claim 22. Hence, for at least the reasons discussed above in relation to claim 22, applicants respectfully submit that claim 23 is also patentably distinguished over the cited art.

Conclusion

For the above-discussed reasons, applicant believes that claims 1-3 and 5-23, as previously presented, are patentably distinguished over the prior art. Favorable action is respectfully requested.

If for any reason an insufficient fee has been paid, the Commissioner is hereby authorized to charge the insufficiency to Deposit Account No. 08-2025.

Respectfully Submitted,

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